

# Leveraging for Better Investment Grounds: IPR Protection through PTAs and FDI

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# Motivation of this research

- Existing literature: PTA is an effective institution to solve commitment problem
- Flip-the-script: PTA is a tool to satisfy private interests

# Research question

Why do some countries end up signing PTAs which include utterly unfavorable clauses to themselves?

- E.g., IPR regulations, sanitary/phytosanitary measures, labor regulations, etc. → hindering development of emerging economies (Markusen, 2001; Kenneth C. Shadlen, 2005)
- Pharmaceutical-relevant IPR clauses in Korea-US FTA and Transpacific Partnership

# MNCs demanding IPR protection

- MNCs as major holders of IPRs (Bessen, 2017)
- MNCs seeking to extend monopoly to market overseas (Autor et al., 2020)
  - ▶ Securing IPR crucial to their success in monopoly
- MNCs lobbying for product-specific protection (Matilde Bombardini and Francesco Trebbi, 2012)
- Abundant resources concentrated among MNCs to buy off political influence (Huneus and Kim, 2018; Bombardini and Trebbi, 2020; Cowgill, Prat, and Valletti, 2021)

# Leveraging market power

- IPR protection VS emerging economies (Markusen, 2001; Kenneth C. Shadlen, 2005)
- Trade dependence of emerging economies on developed nations (Bhattacharya, 1976; Brenton, 2003; Manger and Kenneth C Shadlen, 2014)
- Emerging economies in fear of losing prominent market overseas

# Hypotheses

1. *Firms are more likely to increase FDI only after recipient countries sign PTAs with IPR provisions. (Firm-FDI hypothesis)*
2. *Countries with higher degree of trade network centrality are more likely to succeed in including substantive IPR protection in PTAs. (Centrality hypothesis)*

# Dependent variable

- Firm-FDI hypothesis: *M&A amount* of firm  $i$ , 1993-2018
- Firm-year data on M&A from Bloomberg Terminal (Shim and Stone, 2022)



Hypothesis 1 - Interaction-weighted (IW) estimator for cohort-specific average treatment effect on the treated (CATT) (Sun and Abraham, 2021)

- Treatment: Signing a PTA with IPR protection clause
- Treatment effect heterogeneity due to dynamic treatment timing

# Empirical strategy (Cont'd)

1. Estimation of  $CATT_{e,l}$ :

$$Y_{k,t} = \alpha_k + \lambda_t + \sum_{e \notin C} \sum_{l \neq 1} \delta_{e,l} (\mathbf{1}\{E_k = e\} \cdot D_{k,t}^l) + \epsilon_{k,t}$$

2. Estimate weights of each cohort by sample shares of each cohort in relative time periods  $l \in g$ :

$$Pr\{E_k = e | E_k \in [-l, T - l]\}$$

3. IW estimator:

$$\hat{v}_g = \frac{1}{|g|} \sum_{l \in g} \sum_e \hat{\delta}_{e,l} \widehat{Pr}\{E_k = e | E_k \in [-l, T - l]\}$$

# Results

Table: IW Estimates for CATT

	(1)	(2)	(3)
Before signature	-0.451 (0.306)	-0.443 (0.485)	-0.054 (0.457)
Signed, not enforced	-0.644* (0.295)	-0.999* (0.437)	0.277 (0.910)
After enforcement	0.804*** (0.201)	1.088*** (0.266)	1.206* (0.546)
Year FE	✓	✓	✓
Firm FE	✓	✓	✓
Covariates		✓	
Control cohort	Never treated units	Never treated units	Last treated units
<i>N</i>	4,078	2,462	596

Standard errors clustered at firm level in parentheses

\*  $p < 0.05$ , \*\*  $p < 0.01$ , \*\*\*  $p < 0.001$

# Results

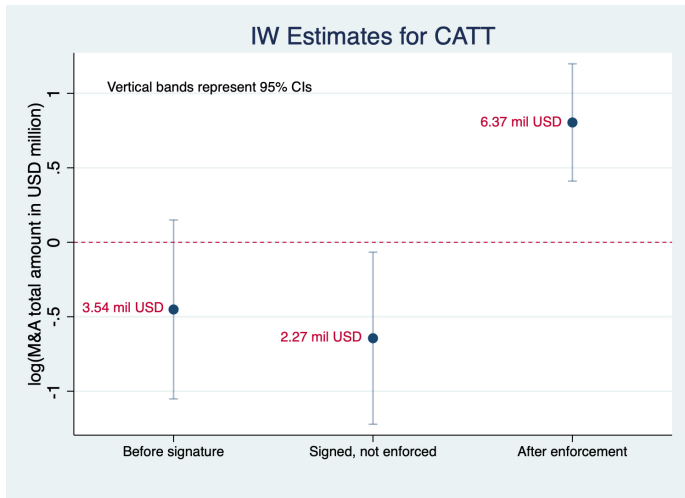


Figure: Interaction-weighted (IW) estimates for CATT on IPR adoption

# Overview on data

- Directed dyads
- Human Development Index  $\geq 0.8$  and GDP per capita  $\geq \$25,000$  as cutoff for developed country status
- For convenience, country  $i$  can be understood as an FDI origin country and country  $j$  as an FDI recipient country.

# Dependent variable

- Hypothesis 2: *IPR protection*
- a dichotomous variable indicating whether a trade agreement signed in year  $t$  includes substantive regulatory provisions dedicated to IPR protection
- acquired from Design of Trade Agreements (DESTA) dataset listing reciprocal trade agreements in dyadic form, spans 2009 - 2018

# Explanatory variable

- *Centrality<sub>*i*</sub>* (eigenvector centrality of country *i* within the global trade network, ranging between 0 and 1)
- Trade networks are built for each year *t* weighted by logged import values obtained from DOTS dataset (Statistics Department, International Monetary Fund, 2021) flowing in the direction of country *i* from *j* within each dyad.

## Hypothesis 2 - Bivariate probit with selection

- Observation of *IPR protection* being solely contingent upon PTA participation status - selection bias issue
- 3 types of observations in the data
  1. dyadic pairs of countries that have no PTAs signed at all between themselves ( $PTA = 0$ )
  2. dyads that signed PTAs without IPR clauses ( $PTA = 1$  & *IPR protection* = 0)
  3. dyads that have PTAs including IPR clauses ( $PTA = 1$  & *IPR protection* = 1)



## Empirical strategy (Bivariate probit, cont'd)

- 1st stage:  $Pr(PTA = 1) = \Phi(Z\gamma)$
- 2nd stage:  $Pr(IPR\ protection = 1, PTA > 0) = \Phi_{bn}(Z\gamma, X\beta, \rho)$
- Exclusion restrictions: *Contiguity, Distance* (Mayer and Zignago, 2011)

Table: Bivariate probit model with selection

	(1)	(2)	(3)	(4)
	HDI	HDI	GDP pc	GDP pc
Centrality <sub><i>j</i></sub>	0.779*	1.070**	1.238**	1.507***
$\rho^{-1}$	3.757*** (0.373)	3.764*** (0.403)	3.116*** (0.252)	3.484*** (0.262)
<i>N</i>	10,893	10,639	8,867	8,660

Standard errors clustered at dyadic level in parentheses

Covariates *Veto players<sub>j</sub>* and *Trade volume* omitted from the table

\*  $p < 0.05$ , \*\*  $p < 0.01$ , \*\*\*  $p < 0.001$

# Results

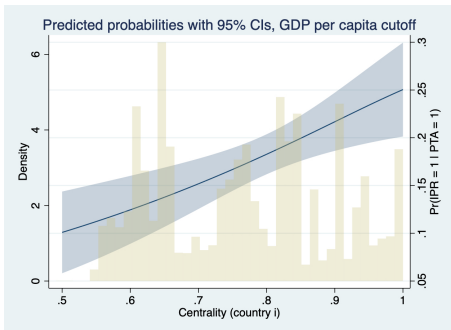
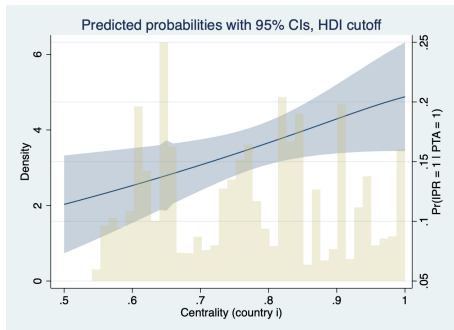


Figure: Human Development Index

Figure: GDP per capita

- Dependent variable is "IPR protection"
- Results robust to different cutoffs of GDP per capita

# Robustness check

Table: 2SLS regression with fixed effects

	(1)	(2)	(3)	(4)
	HDI	HDI	GDP pc	GDP pc
Centrality <sub><i>j</i></sub>	0.262*** (0.049)	0.267*** (0.050)	0.186** (0.061)	0.190** (0.063)
PTA	0.431*** (0.068)	0.434*** (0.068)	0.263** (0.081)	0.263** (0.081)
Year FE	✓	✓	✓	✓
Country FE	✓	✓	✓	✓
Hansen J statistic	1.78	1.54	0.04	0.01
<i>N</i>	10,893	10,639	8,867	8,660

Standard errors clustered at dyadic level in parentheses

Covariates *Veto players<sub>j</sub>* and *Trade volume* omitted from the table

\*  $p < 0.05$ , \*\*  $p < 0.01$ , \*\*\*  $p < 0.001$

# Recap & Implications

- MNCs want to monopolize the local market, home government twists the arms of FDI recipients
- PTA catering to private interests deviating from its original purpose

Thank you!